This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently Amended) An optical flow estimation method comprising ~~the steps of~~:

~~(a)~~ obtaining encoded image data representative of an image sequence of a changing object having a motion field;

~~(b)~~ extracting from said encoded image data first frame data blocks not incorporating motion vector encoding;

~~(c)~~ extracting from said encoded image data second frame data blocks incorporating motion vector encoding;

~~(d)~~ determining from said first frame data blocks confidence map data indicative of the edge strength within said encoded image data and hence the accuracy of the motion field;

~~(e)~~ deriving from said second frame data blocks smooth motion field data blocks in which each data block has a single motion vector and the magnitudes of the motion vectors are normalised; and

~~(f)~~ updating the confidence map data on the basis of the smooth motion field data blocks to provide output data indicative of the optical flow of the image.

2. (Currently Amended) The [[A]] method according to Claim 1, wherein the encoded image data is MPEG-2 encoded video data.

3. (Currently Amended) The [[A]] method according to Claim 1 ~~or 2~~, wherein the first frame data blocks are representative of luminance data of said encoded image data.

4. (Currently Amended) The [[A]] method according to Claim 3, wherein the first frame data blocks extracted from said encoded image data are representative of a discrete cosine transform (DCT) of the luminance data.

5. (Currently Amended) The [[A]] method according to Claim 4, wherein the confidence map data is determined from weighted AC coefficients of the discrete cosine transform (DCT) representative of the intensity gradients in mutually transverse directions.

6. (Currently Amended) The [[A]] method according to Claims 2 ~~1 and 4~~, wherein the confidence map data is determined from the weighted AC[1] and AC[8] coefficients of the MPEG-2 encoded video data representative of the intensity gradients in mutually transverse directions.

7. (Currently Amended) The [[A]] method according to Claim ~~4 or~~ 5, wherein the confidence map data is determined from the sum of the squares of the weighted AC coefficients of the discrete cosine transform (DCT) representative of the intensity gradients in mutually transverse directions.

8. (Currently Amended) The [[A]] method according to ~~any one of~~ Claim[[s]] 1 ~~to 7~~, wherein the smooth motion field data blocks are derived from said second frame data blocks by a transformation in which, where a second frame data block has no motion vector, the corresponding field data block is ascribed the same motion vector as the immediately preceding field data block.

9. (Currently Amended) The [[A]] method according to ~~any one of~~ Claim[[s]] 1 ~~to 8~~, wherein the smooth motion field data blocks are derived from said second frame data blocks by a transformation in which, where a second frame data block has two motion vectors pointing in opposite directions, the corresponding field data block is ascribed a motion vector in one of the directions having a magnitude corresponding to the sum of the magnitudes of said two motion vectors pointing in opposite directions.

10. (Currently Amended) The [[A]] method according to ~~any one of~~ Claim[[s]] 1 ~~to 9~~, wherein the smooth-motion field data blocks are derived from said second frame data blocks

using spatial filtering to suppress isolated smooth motion field data blocks having a low probability of reflecting real movement.

11. (Currently Amended) The [[A]] method according to ~~any one of~~ Claim[[s]] 1 ~~to 10~~, wherein the confidence map data is updated when the vector: of a smooth motion field data block has a magnitude exceeding a certain threshold.

12. (Currently Amended) An optical flow estimation system utilising encoded image data representative of an image sequence of a changing object having a motion field, the system comprising:

~~(a)~~ first extraction means for extracting from said encoded image data first frame data blocks not incorporating motion vector encoding;

~~(b)~~ second extraction means for extracting from said encoded image data second frame data blocks incorporating motion vector encoding;

~~(c)~~ determination means for determining from said first frame data blocks confidence map data indicative of the edge strength within said encoded image data and hence the accuracy of the motion field;

~~(d)~~ derivation means for deriving from said second frame data blocks smooth motion field data blocks in which each data block has a single motion vector and the magnitudes of the motion vectors are normalised; and

~~(e)~~ updating means for updating said confidence map data on the basis of said smooth motion field data blocks to provide output data indicative of the optical flow of the image.

13. (Currently Amended) The [[A]] system according to Claim 12, ~~which is~~ further adapted to receive MPEG-2 encoded video data.

14. (Currently Amended) The [[A]] system according to Claim 12 ~~or 13~~, wherein the first frame data blocks are representative of luminance data of said encoded image data.

15. (Currently Amended) The [[A]] system according to Claim 14, wherein the first extraction means is arranged to extract the first frame data blocks such that the first frame data blocks are representative of a discrete cosine transform (DCT) of the luminance data.

16. (Currently Amended) The [[A]] system according to Claim 15, wherein the determination means is arranged to determine the confidence map data from weighted AC coefficients of the discrete cosine transform (DCT) representative of the intensity gradients in mutually transverse directions.

17. (Currently Amended) The [[A]] system according to Claim[[s]] 13 ~~and 16~~, wherein the determination means is arranged to determine the confidence map data from the weighted AC[l] and AC[8] coefficients of the MPEG-2 encoded video data representative of the intensity gradients in mutually transverse directions.

18. (Currently Amended) The [[A]] system according to Claim 16 ~~or 17~~, wherein the determination means is arranged to determine the confidence map data from the sum of the squares of the weighted AC coefficients of the discrete cosine transform (DCT) representative of the intensity gradients in mutually transverse directions.

19. (Currently Amended) The [[A]] system according to ~~any one of~~ Claim[[s]] 12 ~~to 18~~, wherein the derivation means is arranged to derive the smooth motion field data blocks from said second frame data blocks by a transformation in which, where a second frame data block has no motion vector, the corresponding field data block is ascribed the same motion vector as the immediately preceding field data block.

20. (Currently Amended) The [[A]] system according to ~~any one of~~ Claim[[s]] 12 ~~to 19~~, wherein the derivation means is arranged to derive the smooth motion field data blocks from said second frame data blocks by a transformation in which, where a second frame data block has two motion vectors pointing in opposite directions, the corresponding field data block is ascribed a

motion vector in one of the directions having a magnitude corresponding to the sum of the magnitudes of said two motion vectors pointing in opposite directions.

21. (Currently Amended) The [[A]] system according to ~~any one of~~ Claim[[s]] 12 ~~to 20~~, wherein the derivation means is arranged to derive the smooth motion field data blocks from said second frame data blocks using spatial filtering to suppress isolated smooth motion field data blocks having a low probability of reflecting real movement.

22. (Currently Amended) The [[A]] system according to ~~any one of~~ Claim[[s]] 12 ~~to 21~~, incorporating a digital processor.

23. (Currently Amended) A tangible computer readable storage ~~recording~~ medium having computer readable instructions stored thereon, the instructions comprising ~~on which is recorded an optical flow estimation program for causing a computer to execute the following steps~~:

~~(a)~~ instructions for extracting, from encoded image data representative of an image sequence of a changing object having a motion field, first frame data blocks not incorporating motion vector encoding;

~~(b)~~ instructions for extracting from said encoded image data second frame data blocks incorporating motion vector encoding;

~~(c)~~ instructions for determining from said first frame data blocks confidence map data indicative of the edge strength within said encoded image data and hence the accuracy of the motion field;

~~(d)~~ instructions for deriving from said second frame data blocks smooth motion field data blocks in which each data block has a single motion vector and the magnitudes of the motion vectors are normalised; and

~~(e)~~ instructions for updating the confidence map data on the basis of the smooth motion field data blocks to provide output data indicative of the optical flow of the image.